Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

case, carefully studied and conformed to the genius of the language. Sometimes, however, where technical terms are introduced, which have but lately taken root in English soil, they are applied somewhat variously, in different parts of the work, as if only a wavering and confused idea was attached to them in the mind of the author. We notice this fact, particularly, in the case of the two very convenient correlative terms, *subjective* and *objective*, which are used sometimes in the common and sometimes in the technical sense, so that the reader is often bewildered between them.

But these are small blemishes, and detract but little from the praise due to the writer, for the preparation of a thoughtful and ingenious treatise on an abstruse and difficult subject. If opportunity served, we might break a lance with him in argument on one or two of his favorite opinions. But as this pleasure is denied, it only remains to offer him our thanks for the mingled instruction and entertainment which we have drawn from the perusal of his lucubrations.

---

6. — *A Practical Treatise on Arithmetic ; to which is added a Description of Book-keeping, with Examples for Practice.* By George Leonard, Jr. Boston : George W. Light. 16mo., pp. 347.

The circulation of school-books of the right kind in this country is a matter of great moment, and we hail the appearance of such an one, as we esteem this volume of Mr. Leonard to be, with peculiar satisfaction. It is the greater, when we consider the currency frequently obtained by such things, and the corresponding good or evil they must be continually effecting. Few persons are probably aware, for example, of the extent to which Pike's Arithmetic has been used, and even still is ; or some half a dozen others which might be named, including Adams's, one of the most modern, of which, according to a statement in the author's Preface, some forty thousands had been printed, as long ago as 1831. It is a fact well authenticated, we suppose, that some of our school-books have been sold in numbers ranging from one hundred thousand to three hundred thousand, within the first ten years of their existence ! The appearance of a new candidate for currency like this, with any thing like specious pretensions, may be deemed, we repeat it, a matter of national interest.

It is very evident to us, that Mr. Leonard has not lost sight of these considerations; nor yet of another circumstance, equally interesting to the cause of education,—that, in the crowd of these candidates for the lucrative public favor of which we have spoken, there must be something rather remarkable in the character of a new one, to give it much prospect of a profitable rivalry with its fellows. A fresh Arithmetic is not the imposing phenomenon it once was. It must not only advance claims to improvements of some sort over its predecessors, but it must sustain them too, sooner or later. It must endure examination. Slovenly or spiritless compilations and abridgments will never do.

Such a book is not Mr. Leonard's. It is evident on every page, that great labor has been spent upon it, and that of no blind or dull description, but by a mind impressed with clear views of the subject, and accustomed to make its industry *tell* to some good account. Not that this Arithmetic contains a large proportion of new matter, or proposes many original ideas. We should at once have doubts of its value suggested to us, if it affected any such thing. The improvements it seems to us to present, are those of greater convenience than show. Mostly, they must needs be matters of arrangement, rather than of substantive innovation. McAdam was not the first man who used broken stones in road-making. He used them in a slightly different manner from others; but he altered the whole face of countries by the change. Mr. Leonard has done something, we think, to *Macadamize* arithmetic.

The chief merits of his book may be soon stated. Many of them are comprised in the one important word, simplification; by which we mean to express its character in respect not merely to details, but also to system and order, prevailing coherently throughout the work. Intended, we presume, for the use of common schools, it assumes that the learner is able to read; and beginning at this point, it goes on from one subject to another in a manner which appears to us eminently rational and natural. Every principle is explained, either by simple questions preceding the statement of it, so that the pupil reasons it out for himself, or by the discussion of an operation performed at length in figures. To do this, or attempt it, more or less, is a common practice; but the extent to which these explanations and illustrations accomplish their object, must of course depend upon each author's skill. In this work we consider them to be unusually practical, simple, and clear. These, as all teachers well know, are important points. Brevity is another, and this too has been studied. Most of the school-books multiply useless words, to the great embarrassment of youthful minds. Others have attained the merit of brevity too often at the expense of clearness, — sometimes omitting matter in fact indispensable to the complete comprehension of the subject, and perhaps for the sake of introducing what is, to say the least, of doubtful value. Mr. Leonard's book is remarkably free from these faults. Where it is really necessary, he uses as many words as other authors, but very seldom where it is not. Let us take one specimen. A rule has been adopted in many of our most respectable courts of justice for computing interest when partial payments have been made. In the New York Chancery Reports, this rule is thus stated by Chancellor Kent ; —

> "The rule for casting interest, when partial payments have been made, is to apply the payment, in the first place, to the discharge of the interest then due. If the payment exceeds the interest, the surplus goes towards discharging the principal, and the subsequent interest is to be computed on the balance of principal remaining due. If the payment be less than the interest, the surplus of interest must not be taken to augment the principal; but interest continues on the former principal until the period when the payments, taken together, exceed the interest due, and then the surplus is to be applied towards discharging the principal; and interest is to be computed on the balance, as aforesaid."

Thus we find this rule in the recent Arithmetics. Mr. Leonard seems to us to have gained much and lost nothing by expressing it as follows ;

> "Cast the interest to the time when the money paid shall at least be equal to the interest, then discharge the interest from the money paid, subtract the excess, if any, from the principal, and cast the interest on the new principal as before, and so on."

His management of interest may be referred to as a specimen of his style. Generally the scholar carries off from common treatises no single simple rule that will really serve the purposes of business. He learns, — that is, commits to memory, — a number of half-formed ones, none of which proves available in the end, and he finally gets to performing the operations in question by a process which he owes to his own unaided common sense. The Numeration in this work, the statements of all the simple rules, and the method of proving certain operations (as multiplication), may generally be compared with corresponding portions of common treatises, much, we think, to the advantage of the former.

This is a recommendation which applies to details. A more comprehensive one is deserved by the arrangement at large. The author's study has evidently been, to make this such throughout that one subject would naturally call up another, introducing us from each to each by an obvious and pleasing gradation ; so that any article, as *Fractions*, *Decimal Fractions*, *Federal Money*, &c. when once discussed and explained, instead of being laid aside altogether, is made to recur practically, — not, as it were, intruding, but yet insisting upon being remembered and well understood. This merit would seem to be indispensable ; but, as we have before hinted, authors have attained to it mostly but in imperfect as well as widely-various degrees. For example, Mr. Leonard's first rule in *Decimal Fractions* is for changing a common fraction to a decimal. All the treatises have such a rule. It is as easily explained in one place as another. Now the position of it is important, and herein is the difference between the arrangement before us, and others which occur to our recollection. In them it is placed at the end of Decimals. Here, coming first, its principles can be employed in addition, subtraction, &c., of Decimals, which follow it. Thus the pupil has the advantage of re-impressing an important process upon his mind, at the same time that he performs an operation similar to those which occur in the actual practice of business, and so reminding him of the real utility of the rule. So, in most of the treatises, we find *Federal Money* placed just after *Division.* Of course, many rules must be given, and a long article appears. In the work before us, the subject comes *after Decimals*, and every operation in it is performed by reference merely to *them.* So, in *Compound Numbers*, where *Fractions* are to be applied to them. Mr. Leonard here has inverted the common order. In ordinary text-books, possessed too of much merit, the arrangement makes it necessary to crowd part of *Compound Numbers* into *Fractions ;* and hence follows omission as well as repetition, with a needless enlargement of the volume, and confusion of the pupil's mind. Our meaning will be understood by a reference to *Reduction of Fractions*, or of *Decimals*, in the common treatises and in Mr. Leonard's. *Percentage* is another case in point, and there are many more. We specify these merely as illustrations.

The form and name of that ancient stumbling-block to novices, the *Rule of Three*, are retained as usual. So are the old distinctions generally, which on the whole we think wise. Such a compliment to custom and habit, were it nothing more, need occasion no inconvenience. It is perfectly easy to do so, and yet thoroughly work the old processes over anew. The learner, in this book, is led on through the subject in question with a good deal of tact. Much reliance is placed on examples, to be performed by the pupil, and these are of all conceivable varieties which may be of use to him.

At the same time nothing is solved by algebraic proportion; and in this point the author agrees, so far as we recollect, with Colburn alone. The reason is clear enough. It costs the pupil more to simply state the examples in such a form, than it does to perform them without any statement at all. Nor do many persons, in actual business, make any statements in proportion, in similar cases. They work, in fact, just as it will be seen Mr. Leonard has led his learner by his right explanations to do. It is obvious to remark, that there are a vast many questions in the ***Rule of Three***, which hardly admit of being stated in proportion at all.

This is an instance of judicious omission; and there are many more such, though the treatise embraces, we believe, all the modern improvements in Arithmetic, which deserve to be so called. ***Position***, ***Permutations***, and ***Combinations***, are among these omissions. The two last are algebraic subjects, of limited utility, and not to be explained in arithmetic. The first is wholly useless. One of our popular authors acknowledges this in his preface, though he still inserts the article in his book, apparently from mere deference to habit. Mr. Leonard would perhaps have made a good exchange, in rejecting all these Rules, had he only gained by it the insertion of *Specific Gravity* which is of utility, and the writing out of *Mensuration*, and the *Mechanical Powers*, without the customary mutilation. These articles contain much matter of real value, especially to young mechanics; and, though an arithmetic is not a treatise on mechanics, we must decidedly commend the author's policy, observed in many other cases as well as this, of furnishing in his book all the matter which is really wanted by the class he writes for in actual ordinary life, and which is not to be had from other sources. Every mathematical subject of prime necessity, in fact, belongs to an arithmetic, and so does every important branch of business which contains mathematical calculation. After all, we have but the simple elements of mensuration given here. They occupy little space, though obviously applicable to surfaces and bodies so extensively, that the intelligent student can hardly fail, after making himself master of these principles, to measure correctly any thing which is likely to come in his way. So among the Mechanical Powers, we have a description of the second kind of lever as well as the first. For this a good reason exists. The second is in common use, perhaps as much so as the first. And yet we do not now remember any other instance of its finding a place in an arithmetic. So in *Gauging*, it is usual to give a rule for finding the capacity of a cask in ale and wine gallons only. In this treatise it may be measured in bushels, or in imperial gallons ; the latter of which, at least, is of some moment, inasmuch as this measure is exclusively used in Great Britain, and, to some extent, (like the bushel measure,) in our own country also.

Such, generally, is the practical character of the work ; and we consider it no small merit. Other illustrations of it occur to us in the excellent little department devoted to *Book-Keeping*, adapted to popular use, to business-forms, to the divisions of the dollar, as adopted by auctioneers, and to the account of the moneys in which the value of small articles is usually named in the various parts of the United States. These may look at first like trifles ; but it is trifles like these which make up, in the aggregate, the real availability and true worth of the work. Every traveller must have learned the utility of the statements last named, — not to say every reader of newspapers. Probably the least indispensable part of the work is the article on *Foreign Measures*, *Weights*, and *Moneys*, being chiefly intended for one class, the merchants ; but it is obvious, that a remark like that just made respecting domestic information equally applies, as regards these other matters, to every person who would consult foreign histories, or travels, or even a common journal.

The leading recommendations of Mr. Leonard's book, then, are its simplicity, clearness, and practical character. More can scarcely be said in favor of such a work. We ought, however, to mention, that not a few cases occur of the correction of long-established errors, especially in the form of rules, some of which, popular as they have been and still are, must frequently be productive of most incorrect and inconvenient results. A striking instance of this kind will be found in *Mensuration*. At the same time, the book, doubtless, is not perfect itself. We have detected a few errors in the *answers* here and there, and there are some cases, where the author has relaxed a little from his rigorous principle of making things perfectly plain to the most indifferent understanding. For example ; " Per cent. is a contraction of the Latin *per centum*, which signifies *per* hundred." But these are trivial things, easily corrected in another edition.